John's rule of Ω_A

$$\Omega_A = \frac{B + R(1-B)}{AB + R(1-AB)}$$

where R is a correct answer $0 < R < 1$ of quadratic

$$[AB + R(1-AB)]^2 \Omega = (B + R(1-B))(A + R(1-A))$$

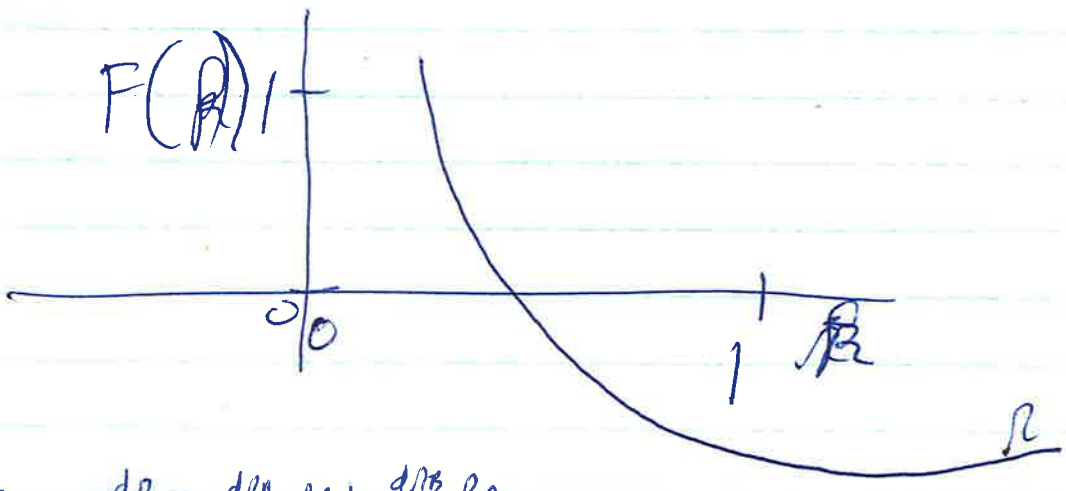
or $A^2B^2\Omega + R^2(1-AB)^2\Omega + 2AB(1-AB)R\Omega$

$$= AB + R\,A(1-B) + RB(1-A) + R^2(1-A)(1-B)$$

or $R^2\{(1-A)(1-B) - (1-AB)^2\Omega\}$

$$+ R\{-2AB(1-AB)\Omega + A + B - 2AB\}$$

$$+ AB(1 - AB\Omega) = 0 \quad := F(R)$$



$\frac{d\Omega_A}{d\Omega} = \frac{d\Omega_A}{dR} \Big/ \frac{d\Omega}{dR}$ $\quad \frac{d\Omega}{dR} = \frac{d\Omega_A}{dR}\cdot\Omega_B + \frac{d\Omega_B}{dR}\cdot\Omega_A$

$\Omega < 0 \quad < 0 \quad < 0 \quad < 0$

$$\frac{d\Omega_A}{dR} = \frac{(1-B)(AB + R(1-AB)) - (B + R(1-B))(1-AB)}{(\quad)^2} = \frac{AB + R(1-AB) - AB^2 - RAB + RAB^2}{(\quad)^2}$$

$$= \frac{-B + AB^2 - R(A - AB + B - AB)}{(\quad)^2} = \frac{AB - B - RAB}{(\quad)^2} = \frac{-B(1-A) - RAB}{(\quad)^2} < 0.$$

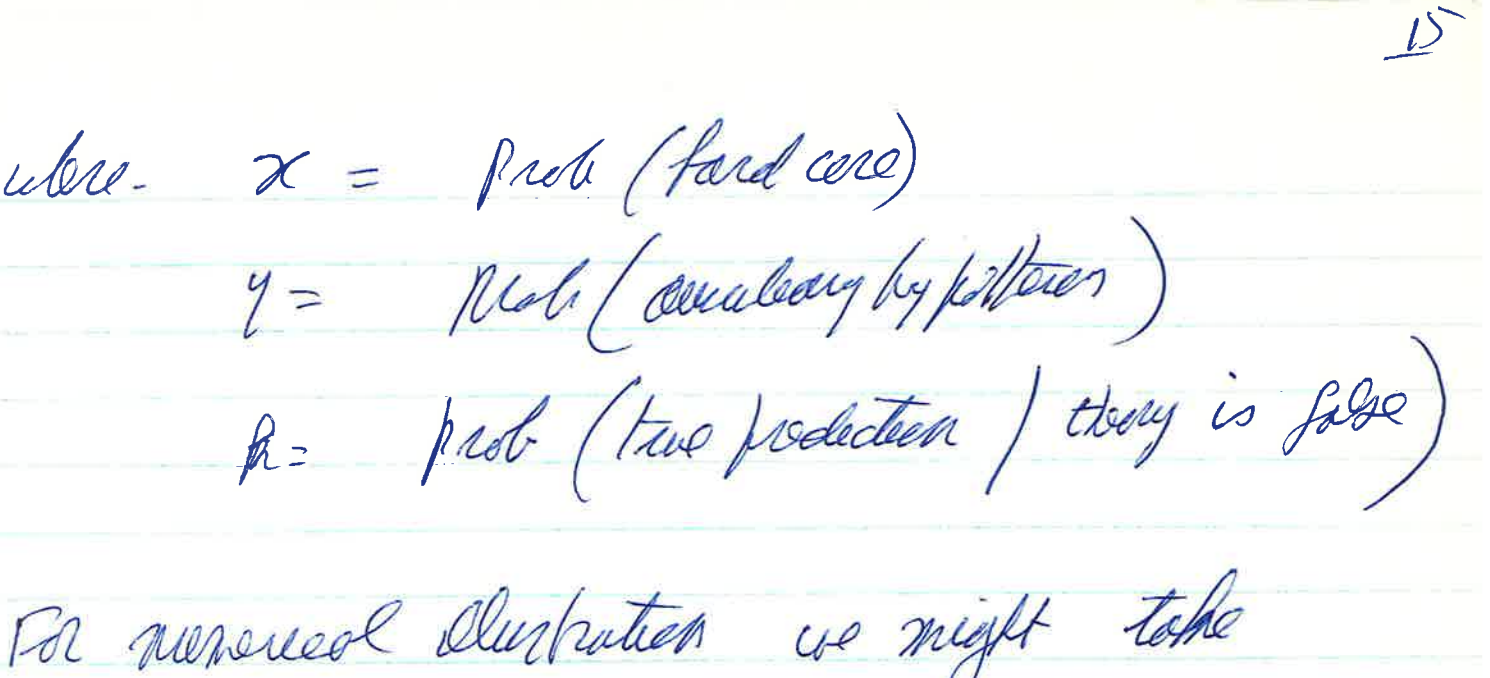
where. x = prob (hard core)

y = prob (annulling by pitters)

p = prob (true prediction / theory is false)

For numerical illustration we might take

$x = 0.9$, $y = 0.5$, $p = .001$ ~~.001~~ .01



sequence of successful → consecutive predictions.

the formulae simply reduce to

For successful prediction $\lambda_c = \frac{1}{P_C}\left(1 - .02\left(\frac{1}{P_C} - 1\right)\right)$

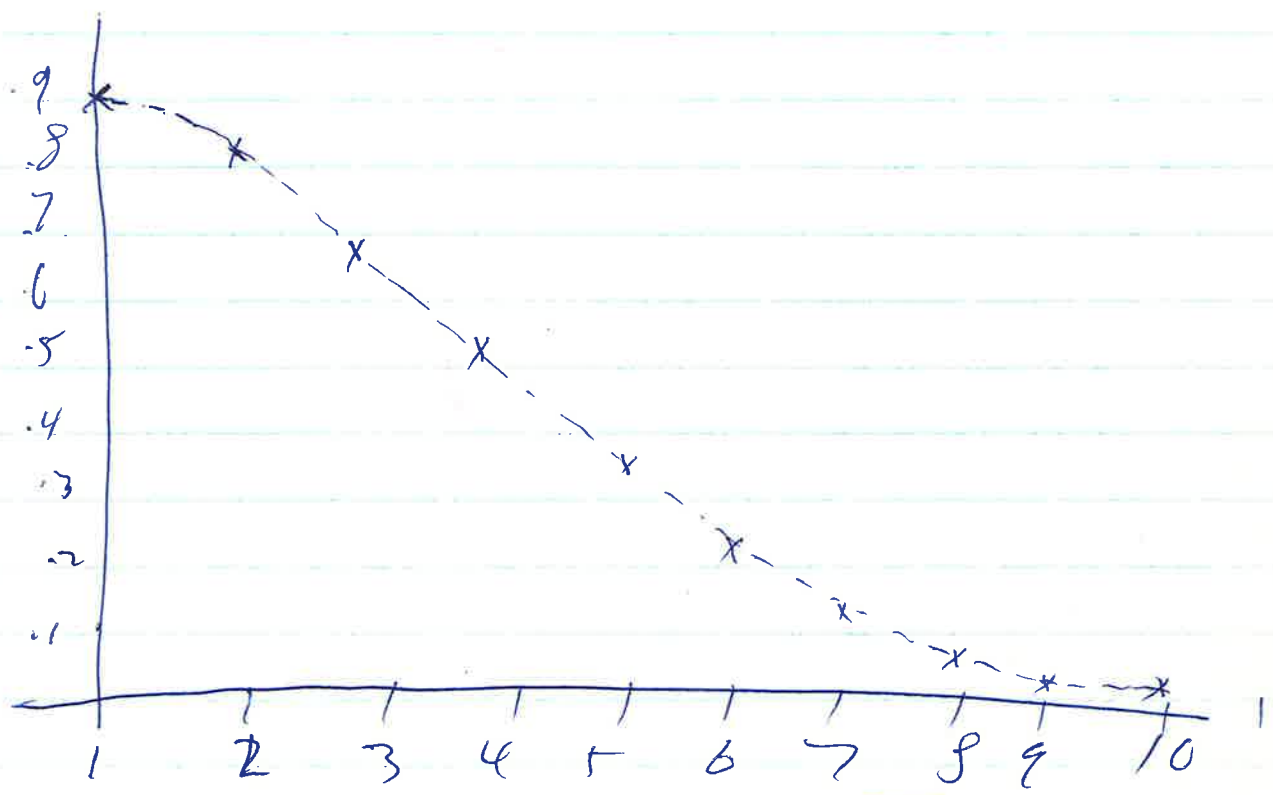
For refutation $\lambda_c = \frac{1}{2 - P_C}$ (negative part of x in diagram)

BUT SINCE here for same excess effect to P_B after one successful prediction which lifts P_B from .5 to .51 is ~~not~~ so close to upper Bound not it is not rational but ~~but~~ but mathematical

Suppose at pt X $P_c = 0.9$

then degeneration proceeds as follows.

No of repetitions	P_c
1	0.9
2	0.82
3	0.69
4	0.53
5	0.36
6	0.22
7	0.12
8	0.06
9	0.03
10	



In the next diagram we show the accurate results for the model.

$$p(T \mid b \& e) = \frac{p(T \mid b) \cdot p(e \mid T \& b)}{p(e \mid T \& b)\, p(T \mid b) + p(e \mid \sim T \& b)\, p(\sim T \mid b)}$$

$p(T \mid b) = x$ ✓

$p(e \mid \sim T \& b) = \varepsilon$

$p(e \mid T \& b) = 1$ ✓

$p(\sim T \mid b) = 1 - x$ ✓

$$p(T \mid b \& e) = \frac{x}{x + \varepsilon(1-x)}$$

$$\frac{p(T \mid b \& e)}{p(T \mid b)} = \frac{1}{x + \varepsilon(1-x)}$$

$p(T, b \& e) \times y = p(T, e)$

$T_1, T_2 \ldots T_n \ldots$

$p(T, e) = \frac{p(T \& e)}{p(e)}$ approx T ↓ ∨

$p(b, e)$

$T_2 \vee \ldots \vee T_n \equiv b$

$p(T, b \& e) = \frac{p(T \& b \& e)}{p(b \& e)} \times \frac{p(b \& e)}{p(e)}$

$p(e \mid \exists \& b) = \varepsilon$

. . . . . .